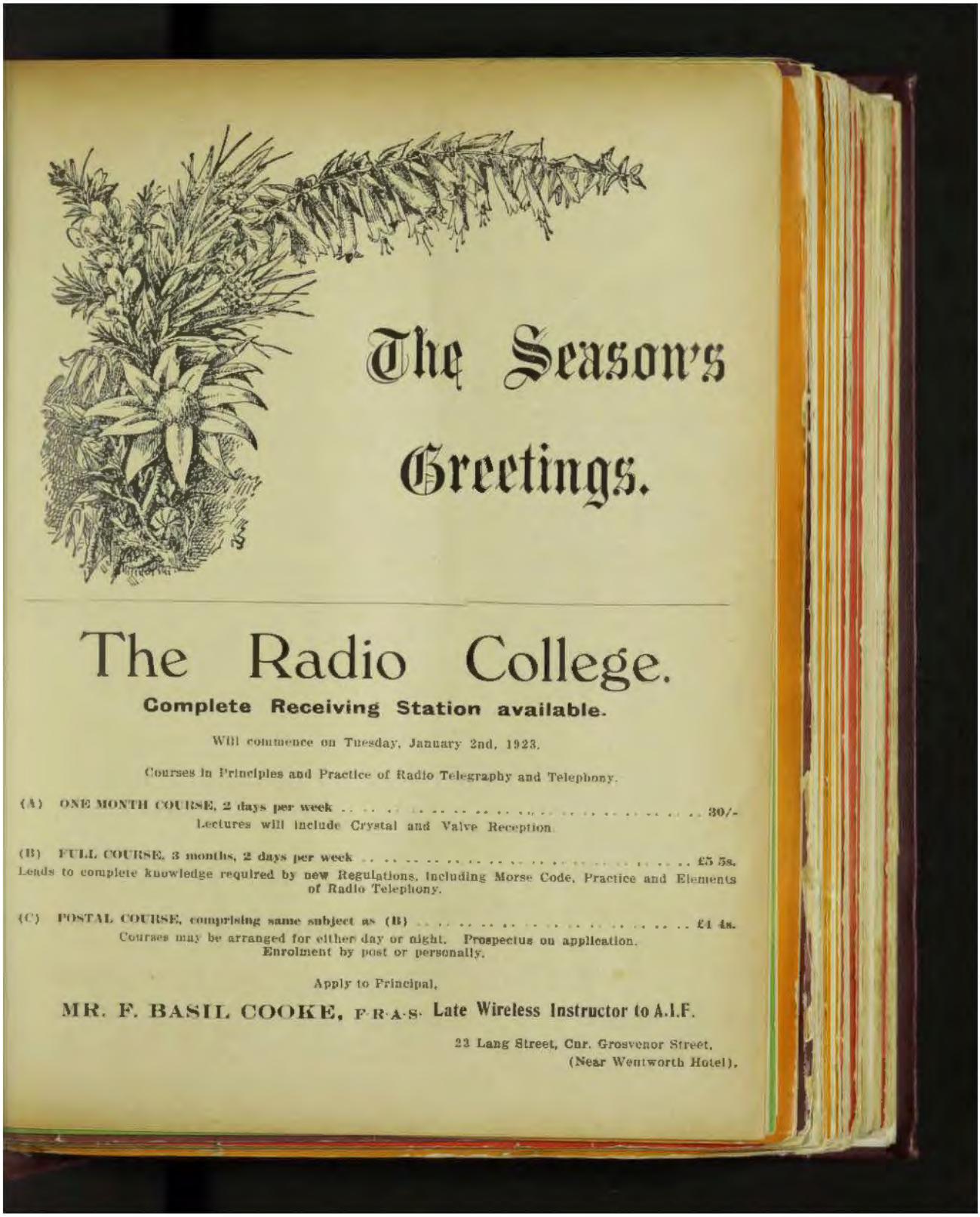

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A TALK WITH "WIRELESS WEEKLY."

A little time ago an Association was formed, consisting of delegates from practically all the clubs in the Metropolitan District and Goulburn.

It was intended that this Association would act as the official mouthpiece of all the clubs and societies, and so be able to control the whole amateur radio movement. After many meetings, the constitution was drawn up and approved of. The organisation was intended to deal with the whole of Australia, but so provided that each State controlled its own affairs until such time as a Federal Executive was formed.

There was to be a State Council with headquarters in Sydney. The members of this Council would be nominees of the various clubs affiliated with the Association. Each club would become a sub-branch of the State branch, and the whole control of the movement would be in the hands of the various clubs through their representatives.

It was contended by several clubs and persons, during the progress of the formation of the Association that those amateurs and experimenters who had become commercially connected with radio, should not hold office in clubs or the Association. As a result, several would not hold office, although, after considerable debate, the majority of delegates to the Council of the Association agreed that such a principle was wrong, and that any experimenter (professional or amateur) could hold office "if elected."

We quote "if elected" because we ask the question "who elects these men?" and the answer must be "the amateur experimenters," who are members of the various clubs.

Surely then the commercial or professional experimenter cannot obtain office unless at the expressed wish of the amateurs.

Then why should these professional experimenters be barred from holding any office, if it is good enough to have them as members?

What have the amateurs to be afraid of in these professional experimenters?

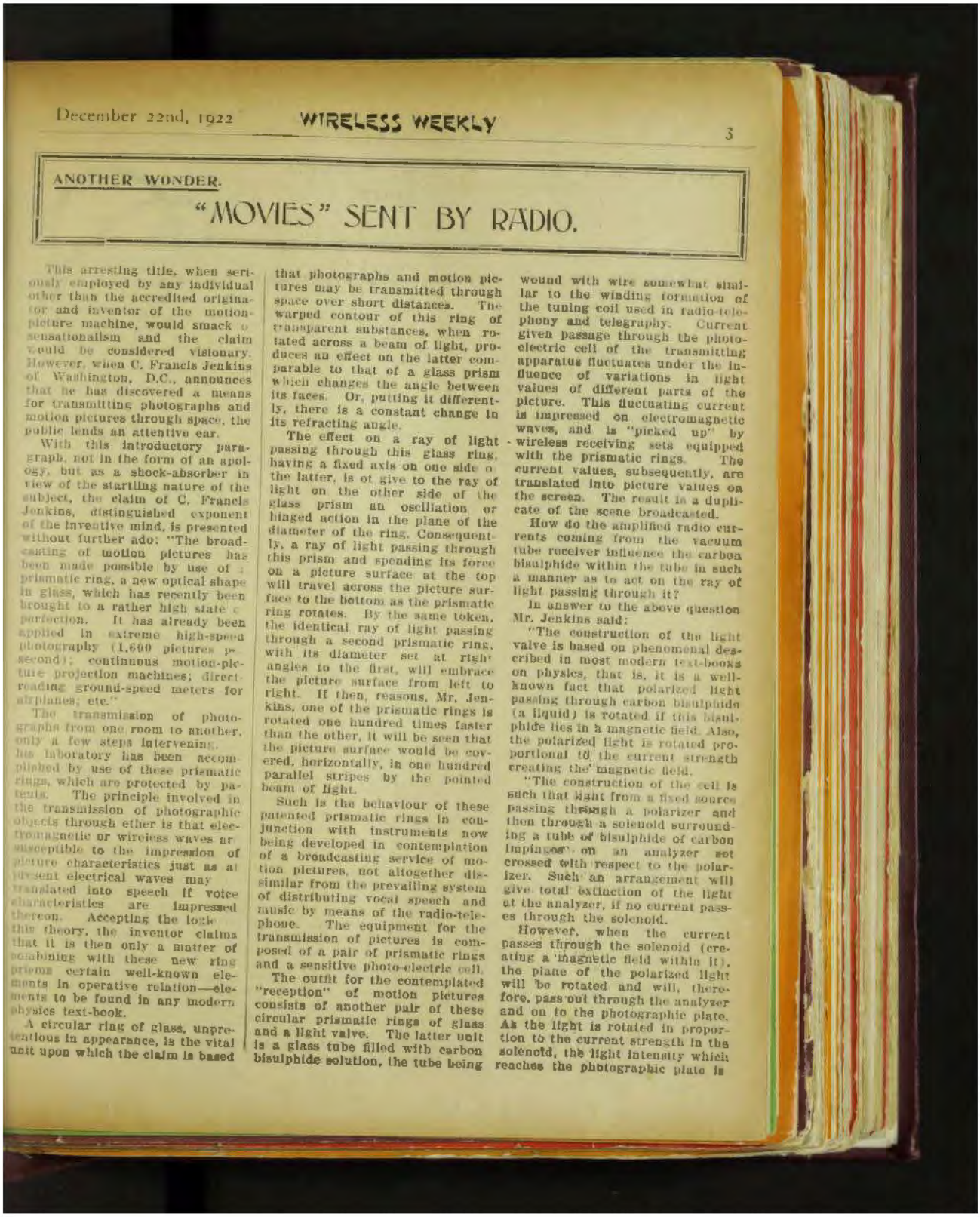
It has been said that they would use the clubs in their commercial interests. We venture to say that the boot would chiefly be on the other foot, and that the clubs would gain more by having these men on their executive.

Be broad-minded and fair; look at all classes of amateur sport, and take a parallel view of their associations with commercial men.

The position now stands that certain clubs have half-heartedly expressed their willingness to affiliate, but as yet nothing positive has been done, either by the clubs concerned or the Association.

Do all amateurs and experimenters realise that the Controller of Wireless has strongly expressed himself as only being able to deal with a Central Council, representing the whole of the clubs? Is it known that no club can speak or act for any one person outside their own members?

It is just about time that the radio clubs and societies woke up and finalised matters immediately.



ANOTHER WONDER.

"MOVIES" SENT BY RADIO.

This arresting title, when seriously employed by any individual other than the accredited originator and inventor of the motion-picture machine, would smack o sensationalism and the claim would be considered visionary. However, when C. Francis Jenkins of Washington, D.C., announces that he has discovered a means for transmitting photographs and motion pictures through space, the public lends an attentive ear.

With this introductory paragraph, not in the form of an apology, but as a shock-absorber in view of the startling nature of the subject, the claim of C. Francis Jenkins, distinguished exponent of the inventive mind, is presented without further ado: "The broadcasting of motion pictures has been made possible by use of a prismatic ring, a new optical shape in glass, which has recently been brought to a rather high state of perfection. It has already been applied in extreme high-speed photography (1,600 pictures per second); continuous motion-picture projection machines; direct-reading ground-speed meters for airplanes; etc."

The transmission of photographs from one room to another, only a few steps intervening, has laboratory has been accomplished by use of these prismatic rings, which are protected by patents. The principle involved in the transmission of photographic objects through ether is that electromagnetic or wireless waves are susceptible to the impression of picture characteristics just as at present electrical waves may translated into speech if voice characteristics are impressed thereon. Accepting the logic this theory, the inventor claims that it is then only a matter of combining with these new ring prisms certain well-known elements in operative relation—elements to be found in any modern physics text-book.

A circular ring of glass, unpretentious in appearance, is the vital unit upon which the claim is based that photographs and motion pictures may be transmitted through space over short distances. The warped contour of this ring of transparent substances, when rotated across a beam of light, produces an effect on the latter comparable to that of a glass prism which changes the angle between its faces. Or, putting it differently, there is a constant change in its refracting angle.

The effect on a ray of light passing through this glass ring, having a fixed axis on one side o the latter, is of give to the ray of light on the other side of the glass prism an oscillation or hinged action in the plane of the diameter of the ring. Consequently, a ray of light passing through this prism and spending its force on a picture surface at the top will travel across the picture surface to the bottom as the prismatic ring rotates. By the same token, the identical ray of light passing through a second prismatic ring, with its diameter set at right angles to the first, will embrace the picture surface from left to right. If then, reasons, Mr. Jenkins, one of the prismatic rings is rotated one hundred times faster than the other, it will be seen that the picture surface would be covered, horizontally, in one hundred parallel stripes by the pointed beam of light.

Such is the behaviour of these patented prismatic rings in conjunction with instruments now being developed in contemplation of a broadcasting service of motion pictures, not altogether dissimilar from the prevailing system of distributing vocal speech and music by means of the radio-telephone. The equipment for the transmission of pictures is composed of a pair of prismatic rings and a sensitive photo-electric cell.

The outfit for the contemplated "reception" of motion pictures consists of another pair of these circular prismatic rings of glass and a light valve. The latter unit is a glass tube filled with carbon bisulphide solution, the tube being wound with wire somewhat similar to the winding formation of the tuning coil used in radio-telephony and telegraphy. Current given passage through the photo-electric cell of the transmitting apparatus fluctuates under the influence of variations in light values of different parts of the picture. This fluctuating current is impressed on electromagnetic waves, and is "picked up" by wireless receiving sets equipped with the prismatic rings. The current values, subsequently, are translated into picture values on the screen. The result is a duplicate of the scene broadcasted.

How do the amplified radio currents coming from the vacuum tube receiver influence the carbon bisulphide within the tube in such a manner as to act on the ray of light passing through it?

In answer to the above question Mr. Jenkins said:

"The construction of the light valve is based on phenomenal described in most modern text-books on physics, that is, it is a well-known fact that polarized light passing through carbon bisulphide (a liquid) is rotated if this bisulphide lies in a magnetic field. Also, the polarized light is rotated proportional to the current strength creating the magnetic field.

"The construction of the cell is such that light from a fixed source passing through a polarizer and then through a solenoid surrounding a tube of bisulphide of carbon impinges on an analyzer set crossed with respect to the polarizer. Such an arrangement will give total extinction of the light at the analyzer, if no current passes through the solenoid.

However, when the current passes through the solenoid (creating a magnetic field within it), the plane of the polarized light will be rotated and will, therefore, pass out through the analyzer and on to the photographic plate. As the light is rotated in proportion to the current strength in the solenoid, the light intensity which reaches the photographic plate is

MOVIES SENT BY RADIO.

also in proportion to the current strength. Therefore, the half tones of the picture sent from the broadcasting stations are reproduced as half tones at the receiving stations. That is, the reproduced picture at the receiving instrument is a faithful reproduction of the picture sent out from the broadcasting station in shadows, half tones, and high lights.

"Again, as this bisulphide cell acts as a weightless shutter, there is practically no limit to the speed with which it can respond to modulated current.

"The motion picture simply consists of a series of successive lantern slides thrown on the screen at a speed of sixteen a second, that is, at a speed which by reason of persistence of vision deceives the eye into the belief that it is looking at a continuous picture on the screen. There is no difference between photographs, i.e., 'stills,' and motion pictures, except in the speed."

IMPROVING NAUEN.

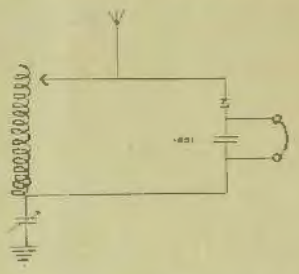
That famous long-distance radio station, Nauen, in Germany, is to be altered so as to increase its range and to meet the increasing traffic in the United States and Argentine Republic.

Twenty-five million marks additional capital is being raised by the Trans-Radio Company, and a beginning has already been made with the constructive work. The plans include the erection of seven new masts, each 689 feet high, and the dismantling of four of the existing masts.

Until now (says an American publication) the Nauen signals have been picked up in the United States by amateurs possessing tuners of extreme wave length range, as well as vacuum tube detectors and two-stage audio-frequency amplifiers. With the increased power of Nauen after the alterations, the signals should be picked up even more readily.

A GOOD PERFORMANCE.

This is a description of the very simple apparatus used by Mr. A. Hinks on which he received Mr. Maclurcan's concert at Mulgoa, miles distant. As far as Mr. Maclurcan knows, this is a record for a crystal set.



A single slide tuner is used inches diameter, wound with turns of No. 24 gauge wire. The crystal is silicon with a gold contact. Phones 8,000 ohm. Brown's.

FOR THE NEXT WAR.

Addressing the cadets of the Royal Military Academy, Woolwich, at the semi-annual inspection recently, the Earl of Cavan, who did such remarkable work during the war, particularly in Italy, and who is now Chief of the Imperial General Staff, said that he had learned with regret that for financial reasons instruction in radio at the Academy had been dropped. He hoped that the courses might soon be restored.

During the war he was horrified at the number of casualties among men engaged in burying telephone wires, and with the advance of radio the question arose, "Why not abolish telephone wires?" In this connection, the Army Council had decided that from division headquarters to the front line there would be no telephone wires in the future. Therefore, the Earl of Cavan looked to all young officers to obtain a practical knowledge of radio.

IRVING LANGMUIR.

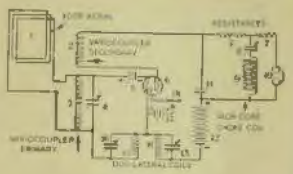
Although best known to the electrical industry as the inventor of the gas filled tungsten lamp, Dr. Irving Langmuir would, no doubt, call this achievement merely his first step in the development of the mighty 20-kilowatt vacuum tube—called the radiotron—a small cylinder of glass and metal, possessing **power enough to transmit** radio messages thousands of miles. Ten of these tubes—easily carried in one hand—are expected to replace huge generators weighing many tons.

Doctor Langmuir was born in Brooklyn, N.Y., and after graduation from Columbia University as a metallurgical engineer spent three years in Germany at the University of Gottingen, where he was fortunate to study under Professor Nernst, inventor of the Nernst lamp. On returning to America in 1906, Doctor Langmuir became instructor in chemistry at Stevens Institute of Technology, and in 1909 entered the Research Laboratory of the General Electric Company at Schenectady, N.Y., where all of his valuable researches have since been carried on.

Those who know him say that the spectacular successes of Doctor Langmuir are due primarily to his ever-present inquisitiveness. He has never been known to take a fact for granted. It was this quality that urged him on to the perfection of the super-radiotron after certain strange actions in the gas filled lamp had piqued his scientific curiosity.

The 20-kilowatt tube—his latest contribution to radio science and designated by Marconi "the greatest development of the age"—contains a grid, a filament, and a plate. The filament is large and rugged and the plate, supplied with a direct current of 20,000 volts, is a metallic cylinder 8 inches long and 1½ inches in diameter, sealed directly into the glass of the tube.

FAMOUS SYSTEM.



The above diagram (reproduced from "Popular Science Monthly") shows the already famous Armstrong super-regenerative system employing one vacuum tube only. In this circuit the constants are as follows:

1. Loop aerial, 12 turns on a 3-foot frame, wired spirally. 2. Secondary of the regulation variocoupler with twice the usual amount of turns. 3. Primary of variocoupler. 4. Variable condenser, .001 mfd. 5. The C battery; 4 volts maximum. 6. Vacuum tube. 7. Resistances, 12,000 ohms. each. 8. Variable condenser, .001 mfd. 9. Iron core choke, 100 milhenries inductance. 10. Telephones. 11. Fixed condenser, .005 mfd. 12. B. battery, 80 volts maximum. 13. Variable condenser, .0005 mfd. 14. Duolateral coil, 1500 turns. 15. Duolateral coil, 1250 turns. 16. Variable condenser, .005 mfd. 17. Storage battery: 6 volts for UV 201, or 8 volts for UV 202. 18. Standard filament rheostat.

MAKE YOUR OWN.

MAKING A MAST.

The flagpole has become more than an ornament or patriotic accessory to the suburban garden or farm home. It is now, in the dawning of the wireless age, beginning to take its place as one of the utilities, and there is nothing more handy to the budding wireless experimenter than a good flagpole on which to raise one end of his aerial.

During the war and just in time for the declaration of peace with Turkey, a lad of fourteen erected an efficient pole. How he did it was as follows:—

The lad went out into the bush and found a blackbutt sapling, about 6-in. thick at the butt after the bark had been removed, and 4-in. thick at a height of 25-ft. This was felled, cleaned, and left to dry, to become lighter. Then another sapling, this time a bloodwood (on account of its lightness) about 23-ft. long, was felled. When they had dried, they were conveyed across the gully that separated the bush from the house, and were there propped on blocks to be painted. Two coats of good white paint were given, and while the paint was drying, the foundation for the pole was being put in.

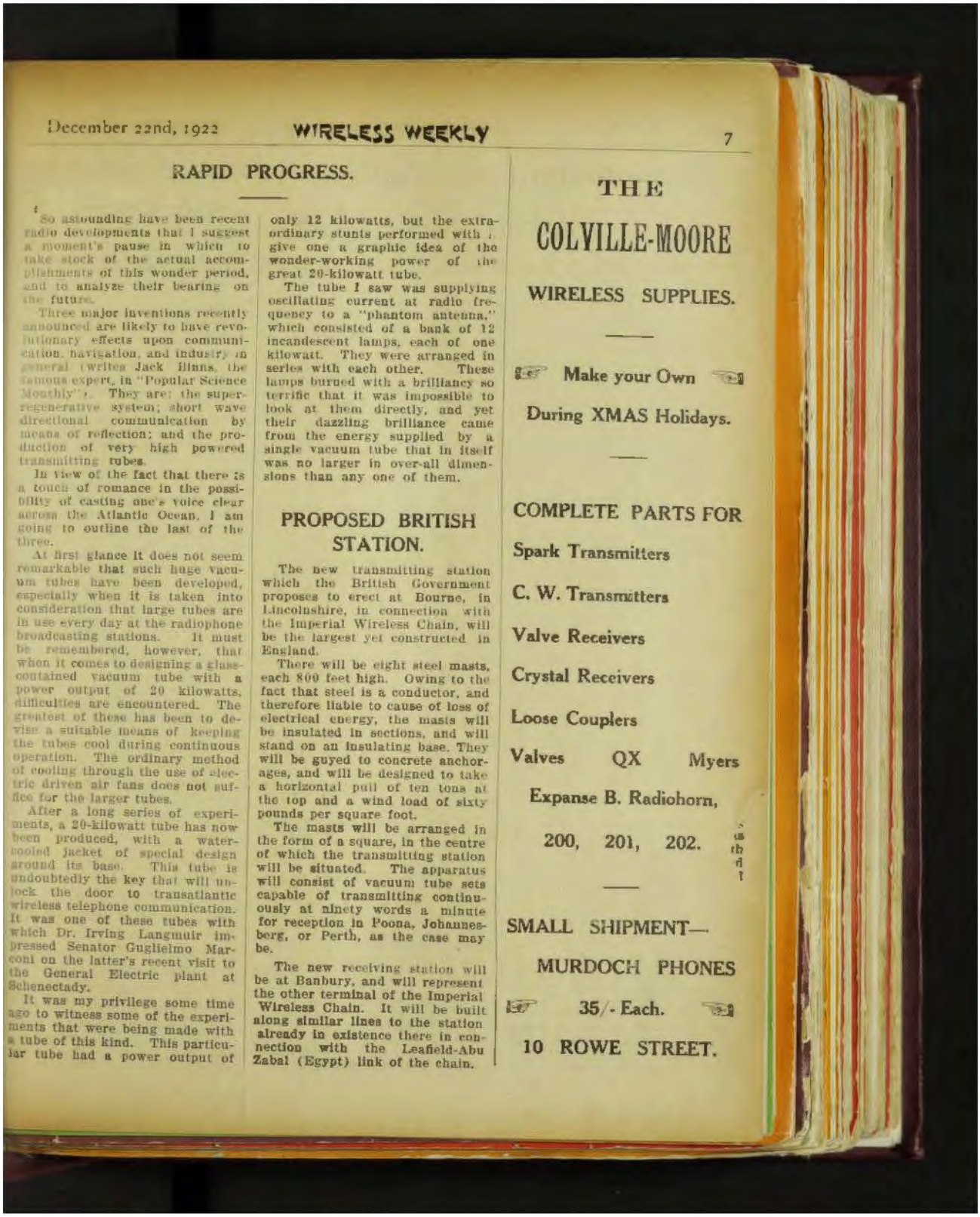
The hole was made to a depth of 3-ft. 6-in. Two good split posts, almost as stout as slabs, were obtained, and a short piece of sapling, the same size as the butt of the flagpole. The small piece of sapling was placed between the two posts, which were then bolted together in the portions that would come above the ground, with two ⅜-in. bolts, 18-in. long. The portion of the posts that was to go into the ground was painted with hot tar. When they were placed in position, about a foot of concrete was rammed around the bottom. The soil was then filed in, and rammed every two or three inches, right to the top of the hole. A better plan still would be to use all concrete for the filling. Shackles for connecting the mainmast to the topmast were made "U" shaped from pieces of tyre iron, with two nuts on each, of a size to bolt the bottom of the topmast to the top of the mainmast. Each shackle consisted of two pieces of "U" shaped tyre-iron, with bolts at the ends, and a flat piece with two holes in it to go over the bolts for the ends to screw up against. These were made a little smaller than the outer diameter of the posts, so that they might be cut in a little, to prevent them from slipping. The posts were placed together, overlapping about 2-ft. 6-in., and the shackles were then put on and tightened, care being taken to get the posts straight.

A thin piece of blackbutt sapling, about 14-ft. long, was adzed off a little in the middle to serve as a cross-arm, and the top of the mainmast was flattened to fit it just below the bottom shackle of the junction. A flat band of iron, with a few screw-holes in it, was strapped over it to hold it in position. The next operation was the attaching of stays. Ordinary No. 8 galvanised fencing wire was used, and it was attached about halfway up the top-mast, through which a small auger-hole was bored to prevent the wire from slipping. The wire was twisted around, through and around the yard, at about 3-ft. from the end, down through and around the main-mast about half-way up. Three wires were also fixed to the mast just below the yard, to form stays for the mainmast. A top for the pole was made by cutting out a circle six inches in diameter, from a piece of 2-in. Oregon board. This was made bun-shaped by the use of a spokeshave and chisels, and a galvanised swivel pulley fastened to it with wire. A hole was bored in the centre on the under side, large enough to take the top of the flag-pole, which went half-way through it, and a brass screw 3½-in. long, inserted from the top, screwed in the top of the pole.

All this work was done to the pole while it lay on the ground. When everything was completed, it was given another coat of paint, and preparations were made to erect it. The two bolts going through the foundation posts were 2-ft. apart. The piece of sapling was taken out, and the butt of the post was placed in position across the bottom bolt, the butt going 6-in. beyond the bolt. The bolt was withdrawn, and the post lowered to its position, and with a long auger the hole already made in the outer posts was continued through the base of the flag-pole. The big bolt was then put through, and loosely screwed up.

The problem now was to erect this heavy pole, 45-ft. in length, there being no high trees to pull it up from. Sheerlegs were made by lashing two ladders together, and supporting them on the third side with a sapling. The improvised implement was not more than 12-ft. in height. There was a small block and tackle available, and by means of this, the pole was pulled as far as the sheer-legs would allow, and lashed to the top of them. The tackle was then connected to two of the stay-wires, and fixed to the foot of a fence post, some distance away: and as soon as the strain was put on it, the sheer-legs and lashing were removed. When the pole was upright, the top-hole was bored through the foundation post, and the other bolt put through and all screwed up tightly.

The stays were then permanently fixed in position, so that the prevailing winds would not have to much influence over the post. A cleat, also made by the blacksmith, was screwed to the foot of the post to fasten halliards to.



RAPID PROGRESS.

So astounding have been recent radio developments that I suggest a moment's pause in which to take stock of the actual accomplishments of this wonder period, and to analyze their bearing on the future.

Three major inventions recently announced are likely to have revolutionary effects upon communication, navigation, and industry in general (writes Jack Binns, the famous expert, in "Popular Science Monthly"). They are: the super-regenerative system; short wave directional communication by means of reflection; and the production of very high powered transmitting tubes.

In view of the fact that there is a touch of romance in the possibility of casting one's voice clear across the Atlantic Ocean, I am going to outline the last of the three.

At first glance it does not seem remarkable that such huge vacuum tubes have been developed, especially when it is taken into consideration that large tubes are in use every day at the radiophone broadcasting stations. It must be remembered, however, that when it comes to designing a glass-contained vacuum tube with a power output of 20 kilowatts, difficulties are encountered. The greatest of these has been to devise a suitable means of keeping the tubes cool during continuous operation. The ordinary method of cooling through the use of electric driven air fans does not suffice for the larger tubes.

After a long series of experiments, a 20-kilowatt tube has now been produced, with a water-cooled jacket of special design around its base. This tube is undoubtedly the key that will unlock the door to transatlantic wireless telephone communication. It was one of these tubes with which Dr. Irving Langmuir impressed Senator Guglielmo Marconi on the latter's recent visit to the General Electric plant at Schenectady.

It was my privilege some time ago to witness some of the experiments that were being made with a tube of this kind. This particular tube had a power output of only 12 kilowatts, but the extraordinary stunts performed with it give one a graphic idea of the wonder-working power of the great 20-kilowatt tube.

The tube I saw was supplying oscillating current at radio frequency to a "phantom antenna," which consisted of a bank of 12 incandescent lamps, each of one kilowatt. They were arranged in series with each other. These lamps burned with a brilliancy so terrific that it was impossible to look at them directly, and yet their dazzling brilliance came from the energy supplied by a single vacuum tube that in itself was no larger in over-all dimensions than any one of them.

PROPOSED BRITISH STATION.

The new transmitting station which the British Government proposes to erect at Bourne, in Lincolnshire, in connection with the Imperial Wireless Chain, will be the largest yet constructed in England.

There will be eight steel masts, each 800 feet high. Owing to the fact that steel is a conductor, and therefore liable to cause of loss of electrical energy, the masts will be insulated in sections, and will stand on an insulating base. They will be guyed to concrete anchorages, and will be designed to take a horizontal pull of ten tons at the top and a wind load of sixty pounds per square foot.

The masts will be arranged in the form of a square, in the centre of which the transmitting station will be situated. The apparatus will consist of vacuum tube sets capable of transmitting continuously at ninety words a minute for reception in Poona, Johannesberg, or Perth, as the case may be.

The new receiving station will be at Banbury, and will represent the other terminal of the Imperial Wireless Chain. It will be built along similar lines to the station already in existence there in connection with the Leafield-Abu Zabal (Egypt) link of the chain.

WONDERFUL WIRELESS COIL

AN AUSTRALIAN INVENTION.

A new and improved form of coil for wireless and other purposes, which embodies the following characteristics:—

Owing to the peculiar manner in which the coil is designed, internal resistance is lowered, distributed capacitance is reduced, high frequency losses are minimised, and self inductance is increased, and at the same time it lends itself admirably for ease and quickness of manufacture, it is self supporting when removed from its former, and particularly adaptable for use as wireless inductance, loading coils, etc., especially where a tapped inductance either primary, secondary or tickler coil is required, and by its use a varied coupling effect from minimum to maximum is remarkably easy to attain. It effects an enormous saving in space (other things being equal) as compared to the solonoid single layer winding, a fact which can be better illustrated by comparison as follows:—The wave-length of a solonoid coil 3in. in diameter, closely wound with a certain wire requires a former 4in. long to equal 600 metres, whereas the fluted basket-wound coil also 3in. in diameter requires only 3in. instead of 4in. of winding to tune an aerial of the same capacity to the same wave-length (that is, 600 metres), and by its use as an example, a complete wireless receiving set tuned to 600 metres and showing remarkable efficiency in bringing in signals has been constructed in a box 3in. x 3in. x 3in. square. In multi coil circuits, either crystal or valve, it lends itself splendidly for coupling by any means at present in use for other coils, such as the well-known loose coupler slide in and out method honeycomb hinged coil method, variocoupler system, variometer, rotation with one coil rotating within the magnetic field of the other coil, sliding coil system where one coil is stationery and the coil either slides on or off the flat face of the other coil to produce either tight or loose coupilngs, in fact, any system which can be used for such coils as solonoid, honeycomb, pancake, staggered, basketwound, spiderweb, pilewound or other multilayered coils to vary the coupling or inductance is applicable to the new coil with the greatest of ease.

It may also be used as High Frequency intervalve transformers, and experiments are at present being carried out with this end in view.

Mr. A. V. Graham, the inventor of this coil, is putting on the market in a few days a crystal set embodying one of the above coils at a price which will astound the wireless world, and be within the reach of every schoolboy.

BIG RADIO CHAINS.

The French Military Chain, is now nearly completed, much of it having been planned since the Armistice. Paris is, or shortly will be, linked by first-class stations with the Soudan, the Congo, Antananarivo, Pondicherry and Cochin China.

All these steps are of the 2,000-mile order or less, except that from Antananarivo to Pondicherry which is 3,100 miles. Besides the Military Chain, France possesses a first-class Naval Station at Nantes, and two magnificent stations at Bordeaux and Lyons.

The Italian state-owned scheme, on the other hand, embraces two modern stations in Italy, and two spark stations in North East Africa. The Rome station was built by the British radio engineer, Mr. Elwoel, during the war, and the Coltano station is being equipped by the Marconi Company. The longest distance between the Italian stations is about 2,500 miles. Still another scheme was the German Chain, which contemplated three stations in Africa, one in the Java Seas, and one in Yap. Those which were erected were lost during the war.

The distance from the Nauen station to the Kamina station is 3,400 miles, and proved too great for real work. Windhuk is nearly 2,000 miles south of Kamina, and is believed to have exchanged scarcely any signals successfully during its short active life.

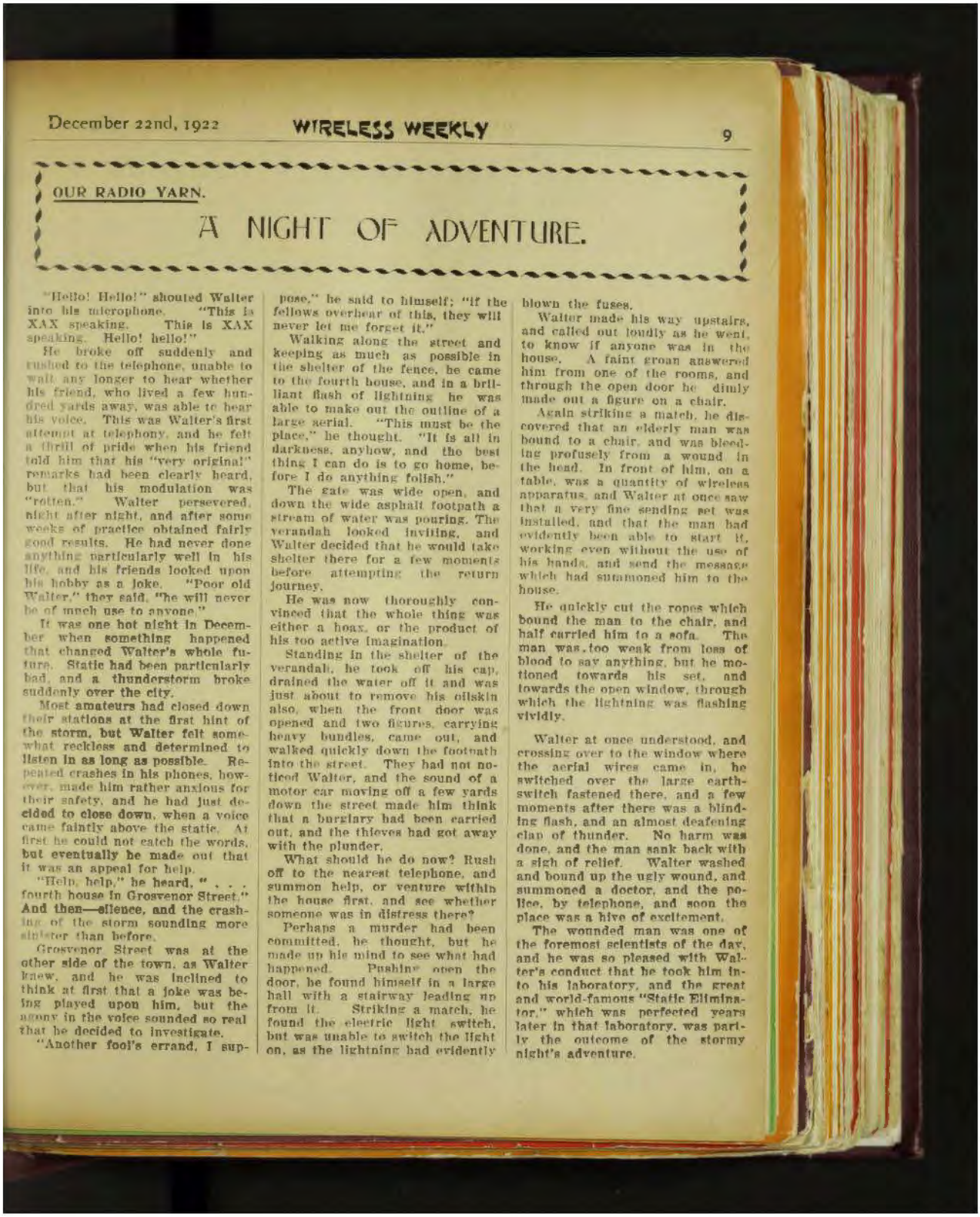
CURRENT FOR RADIO.

With the production and sale of electron tubes for use with radio sets already reaching 300,000 a month, the new prospect of energizing these tubes directly from the lighting socket makes the subject of radio of even greater interest to the central station company, states "Electrical World" in one of the recent editorials.

The Bureau of Standards has now pointed out how vacuum tubes may be operated on the usual lighting current, thus doing away with troublesome storage batteries. And this brings up this thought: The most perplexing problem of the radio boom has been the question of how to finance the cost of broadcasting through revenue to be obtained from the receiving station that enjoys the service. So far no way has been found.

Interesting possibilities are suggested, however, through the combining of carrier-current broadcasting over the lighting lines, as is now being done experimentally by General Squier in Washington, and this new use of central-station power in place of storage batteries. The consumption of energy by the receiving set, plugged into the nearest socket, would automatically provide a revenue directly creditable to broadcasting. This reasoning sounds good up to a certain point. It seems to us that if the filaments are operated directly from the socket, no storage batteries will have to be employed.

Now storage batteries are used, and these must be re-charged at regular intervals on lighting current. Inasmuch as storage batteries take far more current to re-charge them than they actually deliver it would seem to us that the electric companies are now getting more revenue from radio than they might from the direct use of the current. The suggestion, however, is interesting.



OUR RADIO YARN.

A NIGHT OF ADVENTURE.

"Hello! Hello!" shouted Walter into his microphone. "This is XAX speaking. This is XAX speaking. Hello! hello!"

He broke off suddenly and rushed to the telephone, unable to wait any longer to hear whether his friend, who lived a few hundred yards away, was able to hear his voice. This was Walter's first attempt at telephony, and he felt a thrill of pride when his friend told him that his "very original" remarks had been clearly heard, but that his modulation was "rotten." Walter persevered, night after night, and after some weeks of practice obtained fairly good results. He had never done anything particularly well in his life, and his friends looked upon his hobby as a joke. "Poor old Walter," they said, "he will never be of much use to anyone."

It was one hot night in December when something happened that changed Walter's whole future. Static had been particularly bad, and a thunderstorm broke suddenly over the city.

Most amateurs had closed down their stations at the first hint of the storm, but Walter felt somewhat reckless and determined to listen in as long as possible. Repeated crashes in his phones, however, made him rather anxious for their safety, and he had just decided to close down, when a voice came faintly above the static. At first he could not catch the words, but eventually he made out that it was an appeal for help.

"Help, help," he heard, " . . . fourth house in Grosvenor Street." And then—silence, and the crashing of the storm sounding more sinister than before.

Grosvenor Street was at the other side of the town, as Walter knew, and he was inclined to think at first that a joke was being played upon him, but the agony in the voice sounded so real that he decided to investigate.

"Another fool's errand, I suppose," he said to himself; "if the fellows overhear of this, they will never let me forget it."

Walking along the street and keeping as much as possible in the shelter of the fence, he came to the fourth house, and in a brilliant flash of lightning he was able to make out the outline of a large aerial. "This must be the place," he thought. "It is all in darkness, anyhow, and the best thing I can do is to go home, before I do anything foiish."

The gate was wide open, and down the wide asphalt footpath a stream of water was pouring. The verandah looked inviting, and Walter decided that he would take shelter there for a few moments before attempting the return journey.

He was now thoroughly convinced that the whole thing was either a hoax, or the product of his too active imagination.

Standing in the shelter of the verandah, he took off his cap, drained the water off it and was just about to remove his oilskin also, when the front door was opened and two figures, carrying heavy bundles, came out, and walked quickly down the footpath into the street. They had not noticed Walter, and the sound of a motor car moving off a few yards down the street made him think that a burglary had been carried out, and the thieves had got away with the plunder.

What should he do now? Rush off to the nearest telephone, and summon help, or venture within the house first, and see whether someone was in distress there?

Perhaps a murder had been committed, he thought, but he made up his mind to see what had happened. Pushing open the door, he found himself in a large hall with a stairway leading up from it. Striking a match, he found the electric light switch, but was unable to switch the light on, as the lightning had evidently blown the fuses.

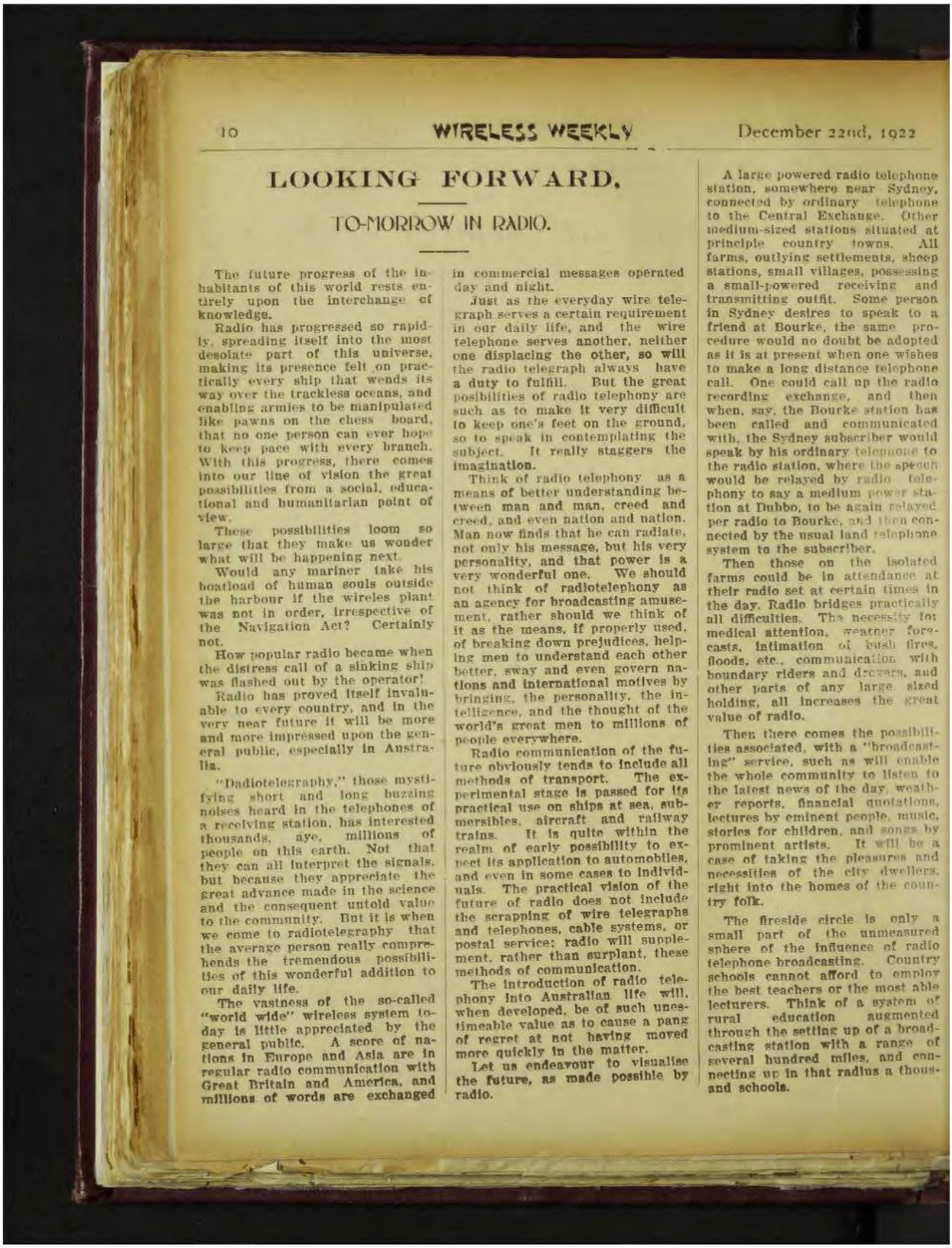
Walter made his way upstairs, and called out loudly as he went, to know if anyone was in the house. A faint groan answered him from one of the rooms, and through the open door he dimly made out a figure on a chair.

Again striking a match, he discovered that an elderly man was bound to a chair, and was bleeding profusely from a wound in the head. In front of him, on a table, was a quantity of wireless apparatus, and Walter at once saw that a very fine sending set was installed, and that the man had evidently been able to start it, working even without the use of his hands, and send the message which had summoned him to the house.

He quickly cut the ropes which bound the man to the chair, and half carried him to a sofa. The man was too weak from loss of blood to say anything, but he motioned towards his set, and towards the open window, through which the lightning was flashing vividly.

Walter at once understood, and crossing over to the window where the aerial wires came in, he switched over the large earth-switch fastened there, and a few moments after there was a blinding flash, and an almost deafening clap of thunder. No harm was done, and the man sank back with a sigh of relief. Walter washed and bound up the ugly wound, and summoned a doctor, and the police, by telephone, and soon the place was a hive of excitement.

The wounded man was one of the foremost scientists of the day, and he was so pleased with Walter's conduct that he took him into his laboratory, and the great and world-famous "Static Eliminator," which was perfected years later in that laboratory, was partly the outcome of the stormy night's adventure.



LOOKING FORWARD.

TO-MORROW IN RADIO.

The future progress of the inhabitants of this world rests entirely upon the interchange of knowledge.

Radio has progressed so rapidly, spreading itself into the most desolate part of this universe, making its presence felt on practically every ship that wends its way over the trackless oceans, and enabling armies to be manipulated like pawns on the chess board, that no one person can ever hope to keep pace with every branch. With this progress, there comes into our line of vision the great possibilities from a social, educational and humanitarian point of view.

These possibilities loom so large that they make us wonder what will be happening next.

Would any mariner take his boatload of human souls outside the harbour if the wireles plant was not in order, irrespective of the Navigation Act? Certainly not.

How popular radio became when the distress call of a sinking ship was flashed out by the operator!

Radio has proved itself invaluable to every country, and in the very near future it will be more and more impressed upon the general public, especially in Australia.

"Radiotelegraphy," those mystifying short and long buzzing noises heard in the telephones of a receiving station, has interested thousands, aye, millions of people on this earth. Not that they can all interpret the signals, but because they appreciate the great advance made in the science and the consequent untold value to the community. But it is when we come to radiotelegraphy that the average person really comprehends the tremendous possibilities of this wonderful addition to our daily life.

The vastness of the so-called "world wide" wireless system today is little appreciated by the general public. A score of nations in Europe and Asia are in regular radio communication with Great Britain and America, and millions of words are exchanged in commercial messages operated day and night.

Just as the everyday wire telegraph serves a certain requirement in our daily life, and the wire telephone serves another, neither one displacing the other, so will the radio telegraph always have a duty to fulfill. But the great posibilities of radio telephony are such as to make it very difficult to keep one's feet on the ground, so to speak in contemplating the subject. It really staggers the imagination.

Think of radio telephony as a means of better understanding between man and man, creed and creed, and even nation and nation. Man now finds that he can radiate, not only his message, but his very personality, and that power is a very wonderful one. We should not think of radiotelephony as an agency for broadcasting amusement, rather should we think of it as the means, if properly used, of breaking down prejudices, helping men to understand each other better, sway and even govern nations and international motives by bringing, the personality, the intelligence, and the thought of the world's great men to millions of people everywhere.

Radio communication of the future obviously tends to include all methods of transport. The experimental stage is passed for its practical use on ships at sea, submersibles, aircraft and railway trains. It is quite within the realm of early possibility to expect its application to automobiles, and even in some cases to individuals. The practical vision of the future of radio does not include the scrapping of wire telegraphs and telephones, cable systems, or postal service; radio will supplement, rather than surplant, these methods of communication.

The introduction of radio telephony into Australian life will, when developed, be of such unestimeable value as to cause a pang of regret at not having moved more quickly in the matter.

Let us endeavour to visualise the future, as made possible by radio.

A large powered radio telephone station, somewhere near Sydney, connected by ordinary telephone to the Central Exchange. Other medium-sized stations situated at principle country towns. All farms, outlying settlements, sheep stations, small villages, possessing a small-powered receiving and transmitting outfit. Some person in Sydney desires to speak to a friend at Bourke, the same procedure would no doubt be adopted as it is at present when one wishes to make a long distance telephone call. One could call up the radio recording exchange, and then when, say, the Bourke station has been called and communicated with, the Sydney subscriber would speak by his ordinary telephone to the radio station, where the speech would be relayed by radio telephony to say a medium power station at Dubbo, to be again relayed per radio to Bourke, and then connected by the usual land telephone system to the subscriber.

Then those on the isolated farms could be in attendance at their radio set at certain times in the day. Radio bridges practically all difficulties. The necessity for medical attention, weather forecasts, intimation of bush fires, floods, etc., communication with boundary riders and drovers, and other parts of any large sized holding, all increases the great value of radio.

Then there comes the possibilities associated, with a "broadcasting" service, such as will enable the whole community to listen to the latest news of the day, weather reports, financial quotations, lectures by eminent people, music, stories for children, and songs by prominent artists. It will be a case of taking the pleasures and necessities of the city dwellers, right into the homes of the country folk.

The fireside circle is only a small part of the unmeasured sphere of the influence of radio telephone broadcasting. Country schools cannot afford to employ the best teachers or the most able lecturers. Think of a system of rural education augmented through the setting up of a broadcasting station with a range of several hundred miles, and connecting up in that radius a thousand schools.

TO-MORROW IN RADIO.

Imagine the benefit of having one skilled lecturer in history or geography, or hygiene or whatever the subject may be, deliver his lesson as the children listen in their school rooms, possibly with the interspersing of appropriate items of entertainment and music to hold the children's interest.

There comes another phase of radio telephony, and that is, communication across the ocean. What of our friends in New Zealand; would it not be truly wonderful if we could converse with them?

The position of radio is destined to become a most conspicuous one in Australia, just as it is in England, Europe and America to-day.

A WARNING.

Recently in Cleveland, Ohio, a father, 48 years of age, and his son, 15 years of age, were killed in a tragedy brought on when an aerial touched a 2200-volt wire. In a hurry to set up a receiving set to hear a radio-phone concert, the young son, with the aid of another boy, who was seriously burned, had attached the aerial to the chimney of his house, and in so doing threw it over a high tension wire.

Not heeding the caution of other persons to tie a rope to the aerial, the young men clutched it. In the meantime, friction of the aerial had rubbed off the insulation of the electric wire, a flash, the youth was killed instantly, and his father, who rushed to save him, died within a few minutes.

This fatality should serve as a warning to others to be extremely careful in avoiding high-tension wires, and for that purpose this narrative is published. An aerial should never be stretched over or under electric light wires or other wires. It is dangerous practice. And it is inefficient practice, for wires are apt to induce troublesome noises which interfere with the reception of radio signals.

TO PASS YOUR TEST.

The New Year is very close now and will probably mark the commencement of an important epoch in the world of Wireless.

The experimenters have been going ahead, hastening very slowly up to now, awaiting the new Regulations.

The Regulations arrived in time to be a Chirstmas Box to all experimenters, both future and present.

The amateur now knows where he stands and consequently a more stable and serious view will be taken of this wonderful and fascinating subject. As a sign of the times the Radio College proposes to open its doors on Jan. 2nd, 1923 and Mr. Cooke, the Principal is offering a cheap, but wonderfully comprehensive course, to put the experimenter on his feet with respect to the elements so necessary to progress in radio science. Each and every lecture will be fully illustrated by actual experiments. A complete valve receiver has been installed at the College which will give the students an opportunity of working with real apparatus. No wireless amateur can afford to neglect learning some of the rudimentary principles of radio if he wishes to carry out systematic experiments. The Radio College is fortunate in having secured the services of Mr. Basil Cooke, as he is a past master in presenting his subjects in an almost fascinating manner.

BELGIUM AT WORK.

Work is in progress on the first large radio station for international traffic in Belgium. Up to the present time the Belgian wireless service has been limited to reception from the high-power stations of other countries and distribution to points in Europe via land wire.

The fact that the circuit was available only to traffic in one direction has prevented the development of the service. The completion of this new station at Bruges will make it possible to handle a considerable volume of the foreign communications of Belgium by radio.

M. Charbonelle, the Belgian telegraph engineer, is experimenting with a high-speed transmission of written messages, the received message appearing in actual long hand equivalent to a photograph of the original written message filed at the transmitting station.

RADIO FIRMS READY.

FOR CHRISTMAS BOOM.

Now that the license fees have been reduced, and the science has become so well-known to the public, there is little doubt that the long-overdue radio boom is upon us.

These facts, coupled with the advent of the Christmas and New Year gift season, will mean that there will be big demands on the shops stocking radio sets and supplies. Those intending to take an active interest in the science would be well advised to make their purchases early, as there is every possibility of there being a shortage of the popular type of receiving sets, as has occurred in other parts of the world.

The advertisers in this journal have all made special preparation for the anticipated Christmas rush.

Miss F. V. Wallace, of 6 Royal Arcade, is showing moderately priced sets of the type to suit beginners, as well as parts for more elaborate outfits, and there would be no difficulty in choosing a present for the experimenter in her establishment.

Another flourishing centre of attraction for the radio fan is the shop of The Colville-Moore Wireless Supplies, 10 Rowe St., Sydney. Here the customer finds satisfaction and good advice. The firm makes a feature of the panel-mounted crystal receiving set, just the thing for the learner.

There could be no more acceptable gift for the man who is really keen on the science than a good set of wireless 'phones. The Western Electric Company (Australia) Ltd., 192 Castlereagh St., Sydney, can supply splendid headsets. The features of this article are reliability and comfort, and the manner in which they reproduce all vocal, musical and other sounds. They are very sensitive.

At Electricity House, 387 George Street, Sydney, Mr. Raymond H. Shaw, the well-known operator of the ill-fated sailer Helen B. Sterling, is in charge of the Radio Department. He is always ready to assist the beginner and others with his knowledge and advice, and this, coupled with the stock of good gear for sale, attracts the attention and custom of many.

Our representative saw Mr. O'Sullivan recently, and he said:—"I have stocks of everything electrical in my shop, and carry out alterations, additions, and repairs to electric lights, bells, etc. I maintain electric installations and have a break-down staff always available. I buy and sell every class of electrical machinery and apparatus and thoroughly test it before letting it go out of the shop. I am the only one in town stocking electrical toys, and have had orders for them from all over the Commonwealth. In my business efficiency is combined with economy, and clients can rely on getting a good article and having a first-class job done. I specialise in lighting sets and ignition devices for launches and motor cars; wireless installations, and electric heating and up-to-date methods, and an increasing list of satisfied customers, and I am out to do the best work at reasonable charges."

I am now specializing in wireless apparatus, and have large stocks always on hand.

Country clients can get all particulars and estimates by writing, and town customers can ring City 8070.

Radio House, of 605 George Street, announce that they have now landed a shipment of Hyman head phones. These are a particularly sensitive phone, with a resistance of 2,200 ohms., which the makers contend is the best resistance for broadcast reception. These phones are extremely comfortable to wear, which is one of the greatest points, if not the most important point to consider when purchasing phones. They are quite reasonably priced. This firm also have the famous Myers valves. Since their introduction into this market, they have already received unsolicited letters from leading experimenters eulogising this valve, some going so far as to say that there is nothing else to equal it. Radio House will be pleased to show these products to anyone interested, and cordially invite visitors to their store at 605 George Street.

Melbourne amateurs have been catered for in a splendid manner by Homecrafts, Ltd. This firm was quick to realise that there was a demand for apparatus in the times when the science was not so well known as it is now. They set out to supply that demand, and did it in such a manner that experimenters soon realised that the firm was worthy of support. There is very little in the radio line that Homecrafts cannot supply at reasonable prices.

When broadcasting becomes general in Australia, as it must in the near future, there will be a great demand for that wonderful instrument, the Magnavox. Already, this instrument is in use all over Australia by radio clubs. There is no need for telephones with a Magnavox. Just switch it on, and all your friends can listen too.

Mr. W. M. B. Veitch, expert of the Magnavox Company, 228 Pitt St., Sydney, will be pleased to furnish further particulars.

A Frenchman, it is stated, has invented a method of securing secrecy in wireless messages. Broadly speaking, the method consists of alternations of silence and effective transmission by means of synchronised sending and receiving apparatus according to an understanding previously arranged as well as the interspersion of false signals.

A SET THAT KEPT FAITH.

Following is a description of the apparatus successfully used at the Illawarra Radio Club's Demonstration at Tolley's Pictures, Kogarah, on December 5th.

The entire set was constructed by and is the property of Mr. C. A. Gorman, of West Botany St., Arncliffe.

The short wave gear is on the right-hand side, the tuning unit employed being a loose coupler, which, by test, has been found to be superior to any other type of coil for short wav work. The primary of coil is controlled by means of "units and tens" switches, and the secondary by ten point switch.

A .0005 condenser is shunted across primary, and a small three plate vernier across the secondary. Beneath the coupler is the radio frequency amplifier and detector control panel.

The radio amplifier is of the tuned intervalve transformer type, and is very efficient.

Signals that are not audible on one valve are easily read on the one stage of radio.

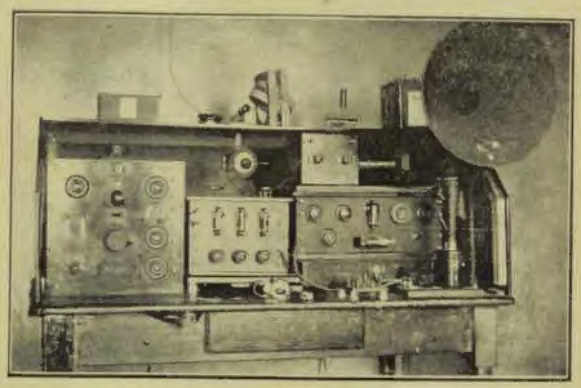
The top valve is the amplifier. Beside it, to the right, the interchangable transformer. The dial at the right is the variable across the transformer. At the bottom of the panel is a control switch. The bottom valve (audiotron) is the detector.

Three dials at the left of the panel are two filament rheos, and potentiometer for controlling grid potential on amplifier valve. The centre panel is the three stage amplifier (especially constructed for demonstration. In this 3V 24 valves controlled by separate filament rheo.'s are used. Little four-prong turnouts on top of the cabinet are spare intervalve (radio) transformers.

The aerial tuning condenser is immediately above the amplifier. The left-hand cabinet is the long wave set, employing bank wound coils, and tunes to 23,000 metres. A variometer on top can be used in place of the aerial tuning condenser for longer waves up to 2,500 metres. The "B" batteries are at the back of the set, and consist of flashlight cells; 100 volts are used on the amplifier, and 40 volts on the detector. The phones are Branches navy type.

The results obtained with this set are very fair. Using one valve only, telephony from VIM, Canterbury, Victoria, and Brisbane Wireless Institute, are all clear and strong, and 2 C.M. and 2 I.X. are very loud.

All Australian, New Zealand and Dutch East Indies Coast stations are copied, also V.P.W. V.K.T., V.P.D. and N.P.N. During the tests previous to the demonstration both 2 C.M. and 2 I.X. telephony were clearly taken at 300 feet.



The three-stage audio amplifier only was used.

Following is a description of result obtained at show:—The set was installed on Sunday, the 3rd, and a test conducted that night. A few minor troubles were encountered at first. After these had been overcome, all looked O.K. for the final business. As is generally the case, trouble must come at the last moment, and it did in the shape of rain, and then —well, anyone who has worked a 5 valve set in the open on a wet night does not need any details. At 6.5 p.m. the signals were very strong. At 7 p.m. it had started to rain, and, due to aerial leakage, signal strength dropped by about 30 per cent.

The operator began to wear a worried look, and made sure there was an open door nearby. At 8.20 p.m. he had to make final adjustment for the start at 8.30. On listening in with one valve and Baldwin's phones for final tuning, the voice and buzzer from 2 C.M. was too weak to read. This gives an idea of the conditions then, but the good old radio frequency amplifier rose to the occasion, and we kept faith with the public.

A Ukrainian engineer is reported to have discovered a method by which radio messages may be sent to a definite receiving station without the danger of being intercepted by other stations. It is stated that by means of a simple apparatus the so-called "locked power line" of the magnetic field may be straightened out and grouped into parallel rays. These rays are said to do away with the necessity of aerials.

KURING-GAI DISTRICT RADIO SOCIETY.

At the last meeting of the Society, held on 12th December, the rules and regulations which had been drawn up at the previous committee meeting were put before the meeting for adoption.

Mr. Mingay then brought up the subject of the Trans-Pacific test, which aroused considerable interest among the members.

A special committee of three were elected to make the necessary arrangements for the co-operation of members in this direction, owing to the intervention of the Christmas holidays. The next meeting will be held on Tuesday, 9th January, 1923, in Chatswood Memorial Hall, at 7.45 p.m.

A key and buzzer will be on hand for the use of members wishing to practice their Morse before the meeting commences.

Please address all enquiries to the Hon. Sec., Mr. R. R. Wilshire, Help St., Chatswood.

LEICHHARDT AND DISTRICT RADIO SOCIETY.

The Tenth General Meeting of members was held at the Club Room on Tuesday, Dec. 12th There was a record attendance, and Mr. Thompson delivered a very interesting and instructive lecture on Accumulators. He handled his subject ably and well, and was accorded a vote of thanks by acclamation.

Owing to the rapid increase of membership it will probably be necessary for the Society to have the use of a more commodious Club Room in the near future, and it is expected that same will be available early in the New Year. Members are requested to watch these columns for any announcement with regard to this matter.

The Society has now gone into recess over the Christmas and New Year holidays, and the next meeting will be held on Tuesday, January 9th.

Any inquiries regarding the Society's activities will be gladly replied to by Mr. W. J. Zech, hon. Sec., 145 Booth St., Annandale.

WAVERLEY AMATEUR RADIO CLUB.

The W.A.R.C. met on Thursday last, when the election of officers for the next six months took place, the following being elected:—

President: Mr. E. Bowman; Vice Presidents: Messrs. D. Williams and G. Gatham; Hon. Secretary: Mr. G. Thompson; Treasurer: Mr. E. Lavington; Committee: Messrs. A. Burrows and Mr. F. C. Perry; Librarian: W. Singleton.

All inquiries should be addressed to the Hon Sec., Mr. G. Thompson c/o Mrs. Wills, Macpherson St., Waverley, Phone Waverley, 1508.

CORRESPONDENCE.

Argyle Road,
Penshurst.
15/12/22.

Mr. A. Thurston (Penshurst) writes:—

I am writing this letter on behalf of several friends of mine who have wireless sets.

They want to know why "Pennant Hills" sends such fast Morse when giving out the weather forecast. There is about one amateur in ten who is able to read it at such a pace. Could that not be sent much slower in order to give the less skilful a chance? This is being done with great success in England, so why not out here? I hope you will say something about this in your columns as it would greatly encourage the amateur.

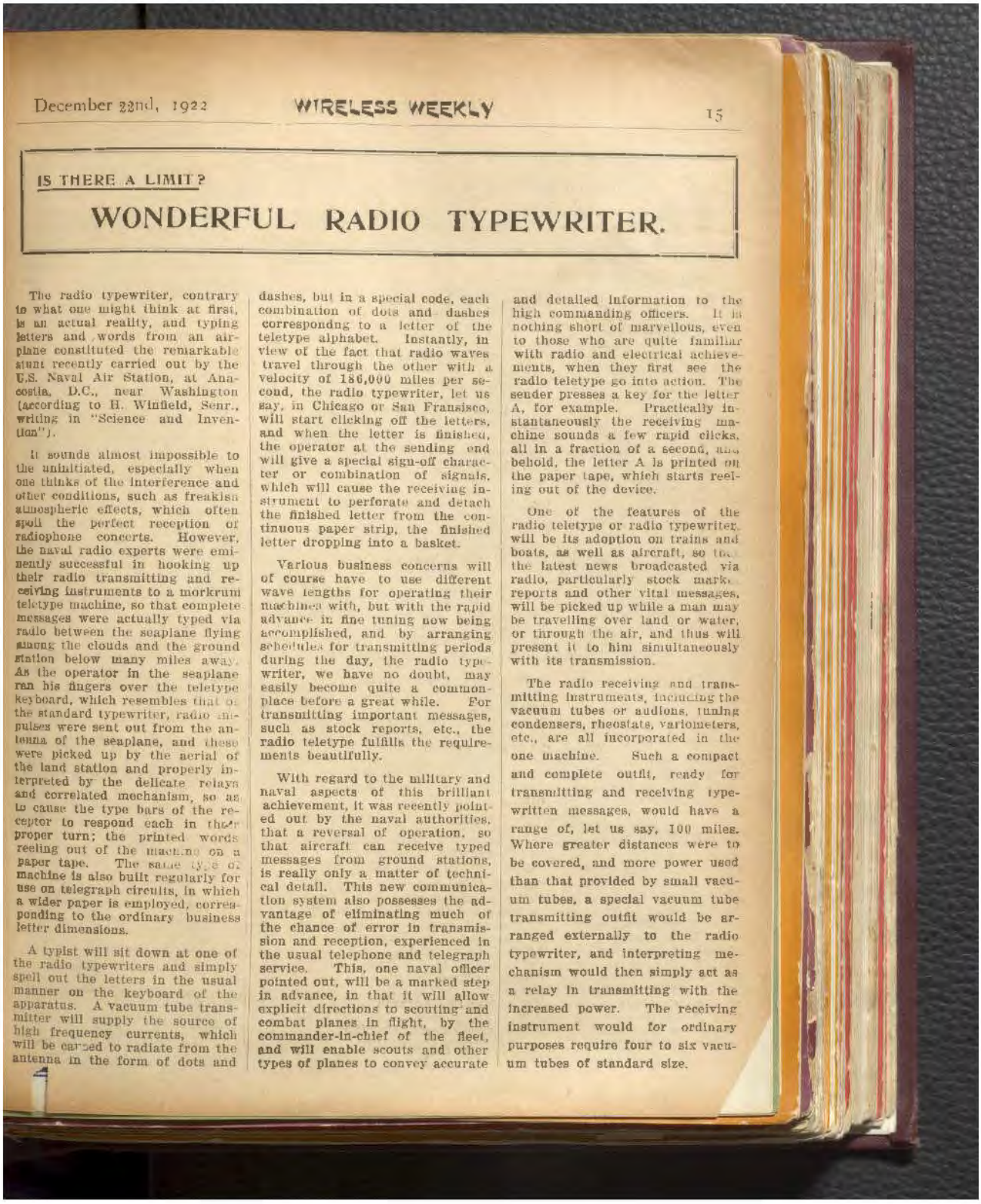
. . . . MR. H. A. STOWE writes.

I would be glad if you could find space in your paper for one or two comments on the recent preliminary meeting in connection with the forthcoming Pacific Tests. I was sorry that I was unable to be present. The decision to charge an entrance fee is sure to meet with some opposition and I myself am against such a course for I maintain the necessary expense should be met by the various clubs, but there should not be much expense. There is quite enough expense to the experimenter at present and it will entail more expense if he decides to go in for the test.

I am also of the opinion that the calling for applications is a mistake, for this reason that there is nothing to stop any experimenter from attempting to receive the signals whether he be adjacent to an official station or not. In fact I think we should try and encourage as many as possible to take part. If an experimenter decides of himself to try for the signals there is nothing to stop him, and he has as much right as any one to try and he may even complain about interference as well as the official station.

I consider that the best plan would be to divide the place up into small districts and areas and allow each district to manage its own affairs. You are sure to find men who will take exception to rules, etc., laid down by any body or club especially if in another district.

I think it requires careful consideration over such organisation as this. But I am strongly against paying any fee to be allowed to receive and if this is persisted in you will find many who could help not taking part.



IS THERE A LIMIT?

WONDERFUL RADIO TYPEWRITER.

The radio typewriter, contrary to what one might think at first, is an actual reality, and typing letters and words from an airplane constituted the remarkable stunt recently carried out by the U.S. Naval Air Station, at Anacostia, D.C., near Washington (according to H. Winfield, Senr., writing in "Science and Invention").

It sounds almost impossible to the uninitiated, especially when one thinks of the interference and other conditions, such as freakish atmospheric effects, which often spoil the perfect reception of radiophone concerts. However, the naval radio experts were eminently successful in hooking up their radio transmitting and receiving instruments to a morkrum teletype machine, so that complete messages were actually typed via radio between the seaplane flying among the clouds and the ground station below many miles away. As the operator in the seaplane ran his fingers over the teletype keyboard, which resembles that of the standard typewriter, radio impulses were sent out from the antenna of the seaplane, and these were picked up by the aerial of the land station and properly interpreted by the delicate relays and correlated mechanism, so as to cause the type bars of the receptor to respond each in their proper turn; the printed words reeling out of the machine on a paper tape. The same type of machine is also built regularly for use on telegraph circuits, in which a wider paper is employed, corresponding to the ordinary business letter dimensions.

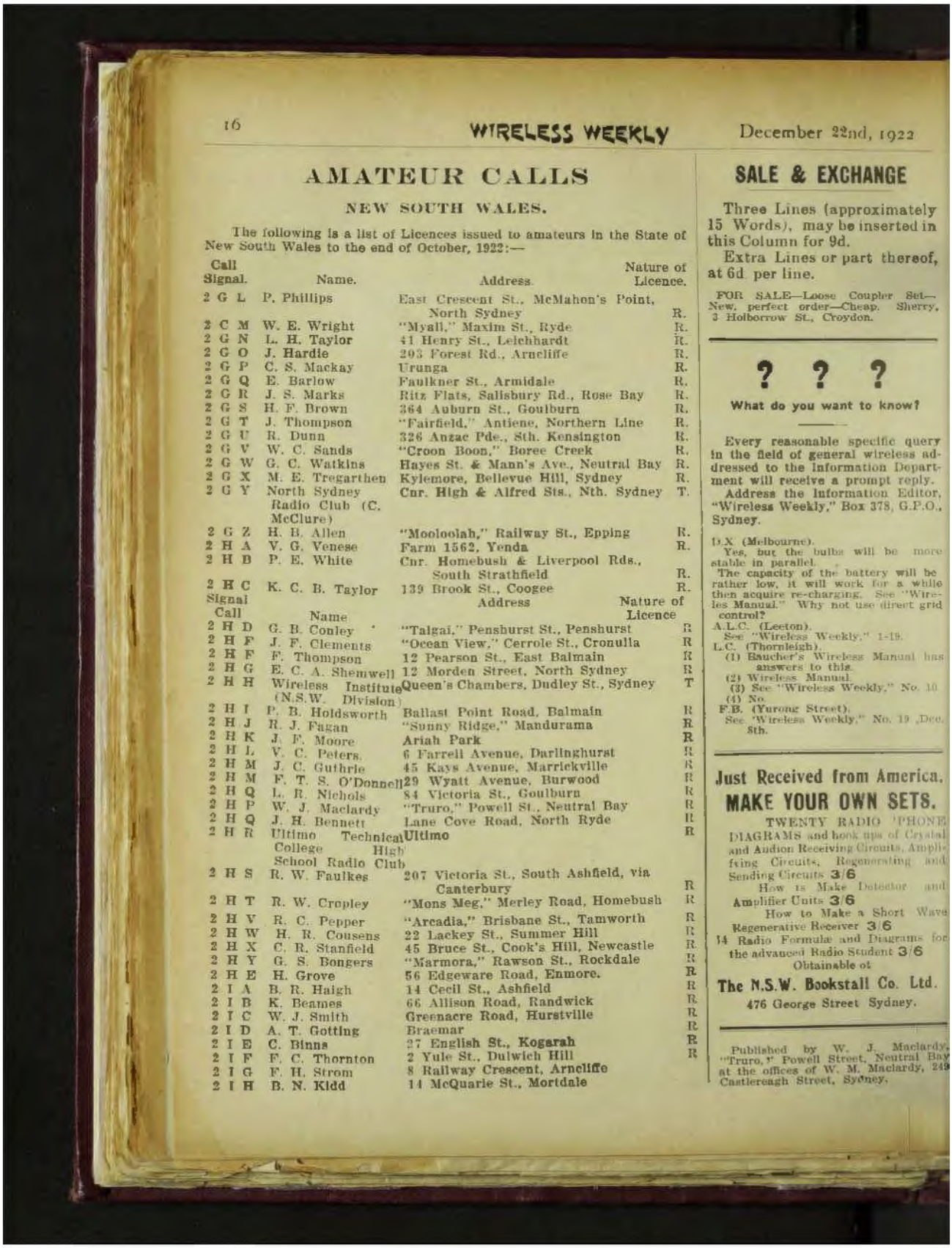
A typist will sit down at one of the radio typewriters and simply spell out the letters in the usual manner on the keyboard of the apparatus. A vacuum tube transmitter will supply the source of high frequency currents, which will be caused to radiate from the antenna in the form of dots and dashes, but in a special code, each combination of dots and dashes corresponding to a letter of the teletype alphabet. Instantly, in view of the fact that radio waves travel through the other with a velocity of 186,000 miles per second, the radio typewriter, let us say, in Chicago or San Fransisco, will start clicking off the letters, and when the letter is finished, the operator at the sending end will give a special sign-off character or combination of signals, which will cause the receiving instrument to perforate and detach the finished letter from the continuous paper strip, the finished letter dropping into a basket.

Various business concerns will of course have to use different wave lengths for operating their machines with, but with the rapid advance in fine tuning now being accomplished, and by arranging schedules for transmitting periods during the day, the radio typewriter, we have no doubt, may easily become quite a commonplace before a great while. For transmitting important messages, such as stock reports, etc., the radio teletype fulfills the requirements beautifully.

With regard to the military and naval aspects of this brilliant achievement, it was recently pointed out by the naval authorities, that a reversal of operation, so that aircraft can receive typed messages from ground stations, is really only a matter of technical detail. This new communication system also possesses the advantage of eliminating much of the chance of error in transmission and reception, experienced in the usual telephone and telegraph service. This, one naval officer pointed out, will be a marked step in advance, in that it will allow explicit directions to scouting and combat planes in flight, by the commander-in-chief of the fleet, and will enable scouts and other types of planes to convey accurate and detailed information to the high commanding officers. It is nothing short of marvellous, even to those who are quite familiar with radio and electrical achievements, when they first see the radio teletype go into action. The sender presses a key for the letter A, for example. Practically instantaneously the receiving machine sounds a few rapid clicks, all in a fraction of a second, and behold, the letter A is printed on the paper tape, which starts reeling out of the device.

One of the features of the radio teletype or radio typewriter, will be its adoption on trains and boats, as well as aircraft, so that the latest news broadcasted via radio, particularly stock market reports and other vital messages, will be picked up while a man may be travelling over land or water, or through the air, and thus will present it to him simultaneously with its transmission.

The radio receiving and transmitting instruments, including the vacuum tubes or audions, tuning condensers, rheostats, variometers, etc., are all incorporated in the one machine. Such a compact and complete outfit, ready for transmitting and receiving typewritten messages, would have a range of, let us say, 100 miles. Where greater distances were to be covered, and more power used than that provided by small vacuum tubes, a special vacuum tube transmitting outfit would be arranged externally to the radio typewriter, and interpreting mechanism would then simply act as a relay in transmitting with the increased power. The receiving instrument would for ordinary purposes require four to six vacuum tubes of standard size.



AMATEUR CALLS

NEW SOUTH WALES.

The following is a list of Licences issued to amateurs in the State of New South Wales to the end of October, 1922:—

Call Signal.	Name.	Address.	Nature of Licence.
2 G L	P. Phillips	East Crescent St., McMahon's Point, North Sydney	R.
2 C M	W. E. Wright	"Myall," Maxim St., Ryde	R.
2 G N	L. H. Taylor	41 Henry St., Leichhardt	R.
2 G O	J. Hardie	203 Forest Rd., Arncliffe	R.
2 G P	C. S. Mackay	Urunga	R.
2 G Q	E. Barlow	Faulkner St., Armidale	R.
2 G R	J. S. Marks	Ritz Flats, Salisbury Rd., Rose Bay	R.
2 G S	H. F. Brown	364 Auburn St., Goulburn	R.
2 G T	J. Thompson	"Fairfield," Antiene, Northern Line	R.
2 G U	R. Dunn	326 Anzac Pde., Sth. Kensington	R.
2 G V	W. C. Sands	"Croon Boon," Boree Creek	R.
2 G W	G. C. Watkins	Hayes St. & Mann's Ave., Neutral Bay	R.
2 G X	M. E. Tregarthen	Kylemore, Bellevue Hill, Sydney	R.
2 G Y	North Sydney Radio Club (C. McClure)	Cnr. High & Alfred Sts., Nth. Sydney	T.
2 G Z	H. B. Allen	"Mooloolah," Railway St., Epping	R.
2 H A	V. G. Venese	Farm 1562, Yenda	R.
2 H B	P. E. White	Cnr. Homebush & Liverpool Rds., South Strathfield	R.
2 H C	K. C. B. Taylor	139 Brook St., Coogee	R.
Signal Call	Name	Address	Nature of Licence
2 H D	G. B. Conley	"Talgai," Penshurst St., Penshurst	R
2 H F	J. F. Clements	"Ocean View," Cerrole St., Cronulla	R
2 H F	F. Thompson	12 Pearson St., East Balmain	R
2 H G	E. C. A. Shemwell	12 Morden Street, North Sydney	R
2 H H	Wireless Institute (N.S.W. Division)	Queen's Chambers, Dudley St., Sydney	T
2 H I	P. B. Holdsworth	Ballast Point Road, Balmain	R
2 H J	R. J. Fagan	"Sunny Ridge," Mandurama	R
2 H K	J. F. Moore	Ariah Park	R
2 H L	V. C. Peters	6 Farrell Avenue, Darlinghurst	R
2 H M	J. C. Guthrie	45 Kays Avenue, Marrickville	R
2 H M	F. T. S. O'Donnell	29 Wyatt Avenue, Burwood	R
2 H Q	L. R. Nichols	84 Victoria St., Goulburn	R
2 H P	W. J. Maclardy	"Truro," Powell St., Neutral Bay	R
2 H Q	J. H. Bennett	Lane Cove Road, North Ryde	R
2 H R	Ultimo Technical College High School Radio Club	Ultimo	R
2 H S	R. W. Faulkes	207 Victoria St., South Ashfield, via Canterbury	R
2 H T	R. W. Cropley	"Mons Meg," Merley Road, Homebush	R
2 H V	R. C. Pepper	"Arcadia," Brisbane St., Tamworth	R
2 H W	H. R. Cousens	22 Lackey St., Summer Hill	R
2 H X	C. R. Stanfield	45 Bruce St., Cook's Hill, Newcastle	R
2 H Y	G. S. Bongers	"Marmora," Rawson St., Rockdale	R
2 H E	H. Grove	56 Edgeware Road, Enmore.	R
2 I A	B. R. Haigh	14 Cecil St., Ashfield	R
2 I B	K. Beames	66 Allison Road, Randwick	R
2 I C	W. J. Smith	Greenacre Road, Hurstville	R
2 I D	A. T. Gotting	Braemar	R
2 I E	C. Binns	27 English St., Kogarah	R
2 I F	F. C. Thornton	2 Yule St., Dulwich Hill	R
2 I G	F. H. Strom	8 Railway Crescent, Arncliffe	R
2 I H	B. N. Kidd	14 McQuarie St., Mortdale	R

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Three Lines (approximately 15 Words), may be inserted in this Column for 9d.

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What do you want to know?

Every reasonable specific query in the field of general wireless addressed to the Information Department will receive a prompt reply.

Address the Information Editor, "Wireless Weekly," Box 378, G.P.O., Sydney.

D.X. (Melbourne).
Yes, but the bulbs will be more stable in parallel.
The capacity of the battery will be rather low, it will work for a while then acquire re-charging. See "Wireless Manual." Why not use direct grid control?

A.L.C. (Leeton).
See "Wireless Weekly," 1-19.

L.C. (Thornleigh).
(1) Baucher's Wireless Manual has answers to this.
(2) Wireless Manual.
(3) See "Wireless Weekly," No. 10
(4) No.

F.B. (Yurong Street).
See "Wireless Weekly," No. 19, Dec. 8th.

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